FRUITLAND
SOURCE WATER ASSESSMENT REPORT

July 24, 2000

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for Fruitland, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Fruitland drinking water system consists of eleven wells, most of which are currently threatened by levels of nitrate contamination that approach or exceed the drinking water Maximum Contaminant Level for nitrate (10 mg/l). The nitrate trend in most wells is increasing. Several wells have been shut down or blended with water from other wells.

Nitrogen isotope data indicate that the source of high nitrate in the city wells is primarily due to agricultural activities such as the use of commercial fertilizer on crops. Detection of selected pesticides (atrazine and dacthal), used on local crops further supports the likelihood of impacts from agricultural activities.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Fruitland, source water protection activities should focus on implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas. Most of the designated areas are outside the direct jurisdiction of Fruitland. Partnerships with state and local agricultural agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of groundwater, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission and local Soil Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact your regional DEQ office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR FRUITLAND, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached

Background

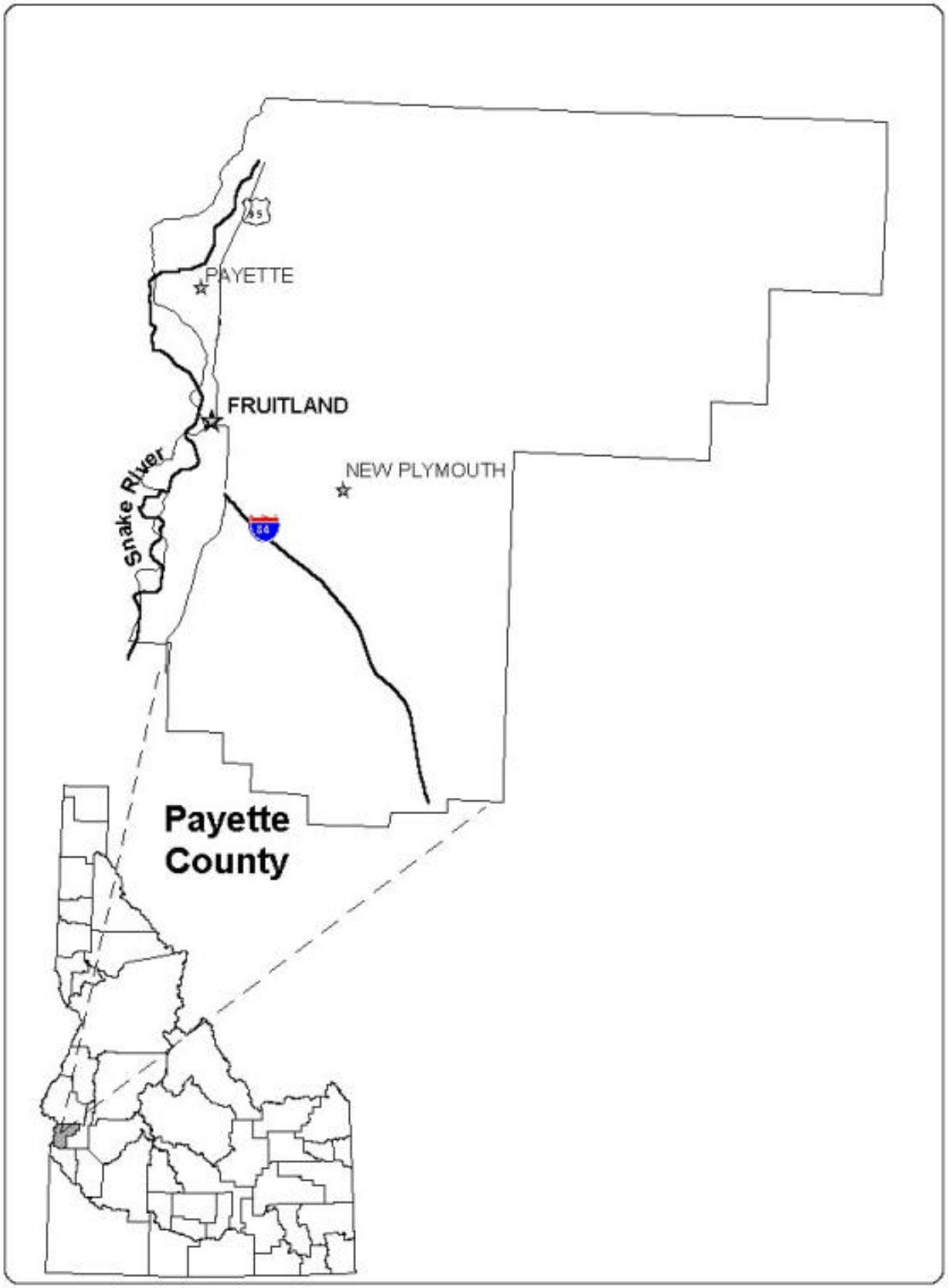
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. Geographic Location of Fruitland



Section 2. Conducting the Assessment

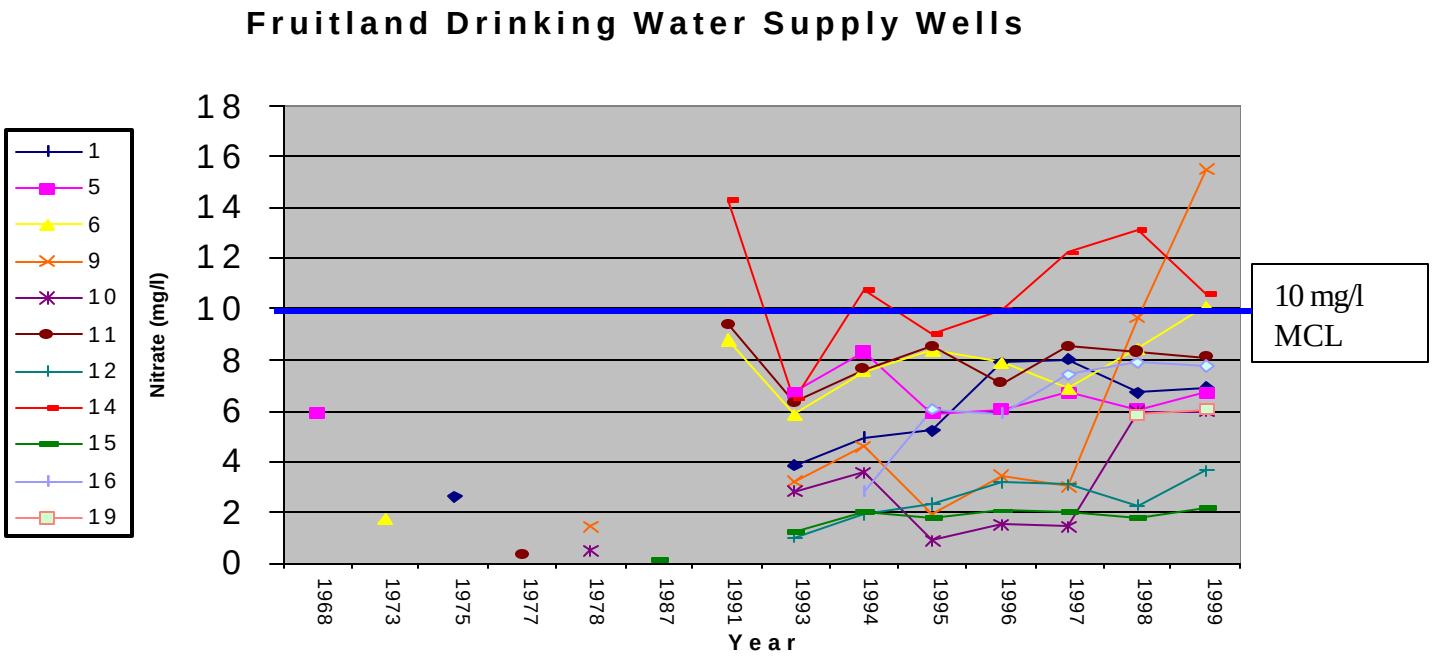
General Description of the Source Water Quality

Fruitland, Idaho is a community of approximately 3,300 people, located south of the confluence of the Payette and Snake Rivers in southwestern Idaho (Figure 1). The public drinking water system for Fruitland is comprised of eleven wells located throughout the city as well as to the north of the city. Prior to beginning the assessment, existing water quality data for Fruitland was compiled.

The hydrology and water quality of the Lower Payette area have been extensively studied over the last fifteen years. Agencies which have conducted investigations include the University of Idaho (U of I, 1986), United States Geological Survey (USGS, 1986), Idaho Division of Environmental Quality (DEQ, 1994, 1996), Idaho Department of Agriculture (ISDA, 1998), and the Natural Resources Conservation Service (NRCS, 1991). While these studies have documented areas of water quality problems, a complete understanding of the hydrogeological system of the area required further study. In anticipation of the source water assessment process, a study of wellhead viability in the City of Fruitland was conducted by DEQ (DEQ, in prep.).

The primary water quality issue currently facing Fruitland is that of increasing nitrate contamination and the problems associated with managing this contamination. In recent years several wells in the drinking water system have been taken off line or have had their water blended with water from other wells as a result of nitrate concentrations that exceeded the Maximum Contaminant Level of 10 mg/l. Historic water quality data for the Fruitland wells, compiled to evaluate trends, showed an increasing trend in some wells (Figure 2).

Figure 2. Historical Nitrate Trends in Fruitland Drinking Water Supply Wells



A new well recently brought on line (Well 19) has an initial nitrate concentration of 6 mg/l. The combination of wells taken off line along with increasing demands from industrial and residential growth have the potential to limit the ability to provide adequate supplies of clean water.

In addition to problems associated with nitrate contamination, many of the wells in the system show elevated levels of arsenic. These arsenic levels are presently below current drinking water standards (0.050 mg/l). However, the EPA is presently proposing to reduce the drinking water standard for arsenic to 0.005 mg/l. All the wells in the system would not meet this future standard and treatment might be the only option.

Defining the Zones of Contribution--Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time of travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model developed by the USGS and approved by the EPA in determining the 3-, 6-, and 10- year time of travel for water associated with the Payette Valley aquifer in the vicinity of Fruitland, Idaho. The computer model used site specific data, assimilated by DEQ from a variety of sources including the city and other local well logs. The delineated source water assessment area for Fruitland can best be described as three clusters of long narrow shapes each serving a group of the city wells. The actual data used by DEQ in determining the source water assessment delineation areas are available upon request and are further summarized in the DEQ report on wellhead viability (DEQ 2000.).

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside Fruitland is gravity-irrigated agriculture. Historically, the growth of orchard crops dominated the study area. In recent years the primary agricultural crops grown have shifted to small grains (barley, oats, wheat), sugarbeets, corn, onions, mint, and alfalfa hay. Most water for irrigation is supplied from surface water through canals derived from the Payette River.

Land use within Fruitland city limits consists of residential homes, small businesses, and light manufacturing. Homes within Fruitland are connected to a sewer system, while homes outside of town operate with individual septic systems. Fruitland has two wastewater treatment lagoons located to the northeast and west of the city adjacent to the Payette and Snake Rivers and down gradient from municipal water supply wells.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during December of 1998. The first phase involved identifying and documenting potential contaminant sources within the Fruitland Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second or enhanced phase of the contaminant inventory involved conducting an on-the-ground identification of potential sources and validation of sources identified in phase one. This task was undertaken with the assistance of Jerry Campbell, City of Fruitland Public Works Department.

A total of 19 potential contaminant sites are located within the delineated source water areas (see Table 1). Most of the potential contaminant sources within delineated source water areas located outside Fruitland city limits were primarily irrigated agricultural operations, which use fertilizer and pesticides. The density of residences and their septic systems outside the service area of the city wastewater treatment facilities was not considered high enough to constitute a significant source. There was only one confined animal feeding operation identified.

Potential contaminant sources located in the delineated source water areas within Fruitland include underground and above ground storage tank facilities, small businesses which may use and store chemicals and organic materials, historical businesses such as old gas stations, auto repair and sales facilities, food processing facilities, and several large manufacturing facilities (Figure 3).

Contaminants of concern are primarily business chemicals such as petroleum products, solvents and degreasers. There are three large manufacturing facilities within delineated source areas that appear to have significant potential sources of contamination with respect to quantity of chemicals used and/or stored on site. These chemicals include solvents, hydrocarbons, acids, bases, and anhydrous ammonia. A petroleum pipeline presents another large significant source of volatile organic compounds and synthetic organic compounds for selected wells. Table 1 lists the potential contaminants of concern, time of travel zones, and information source.

Figure 3. City of Fruitland Delineation Map and Contaminant Sources

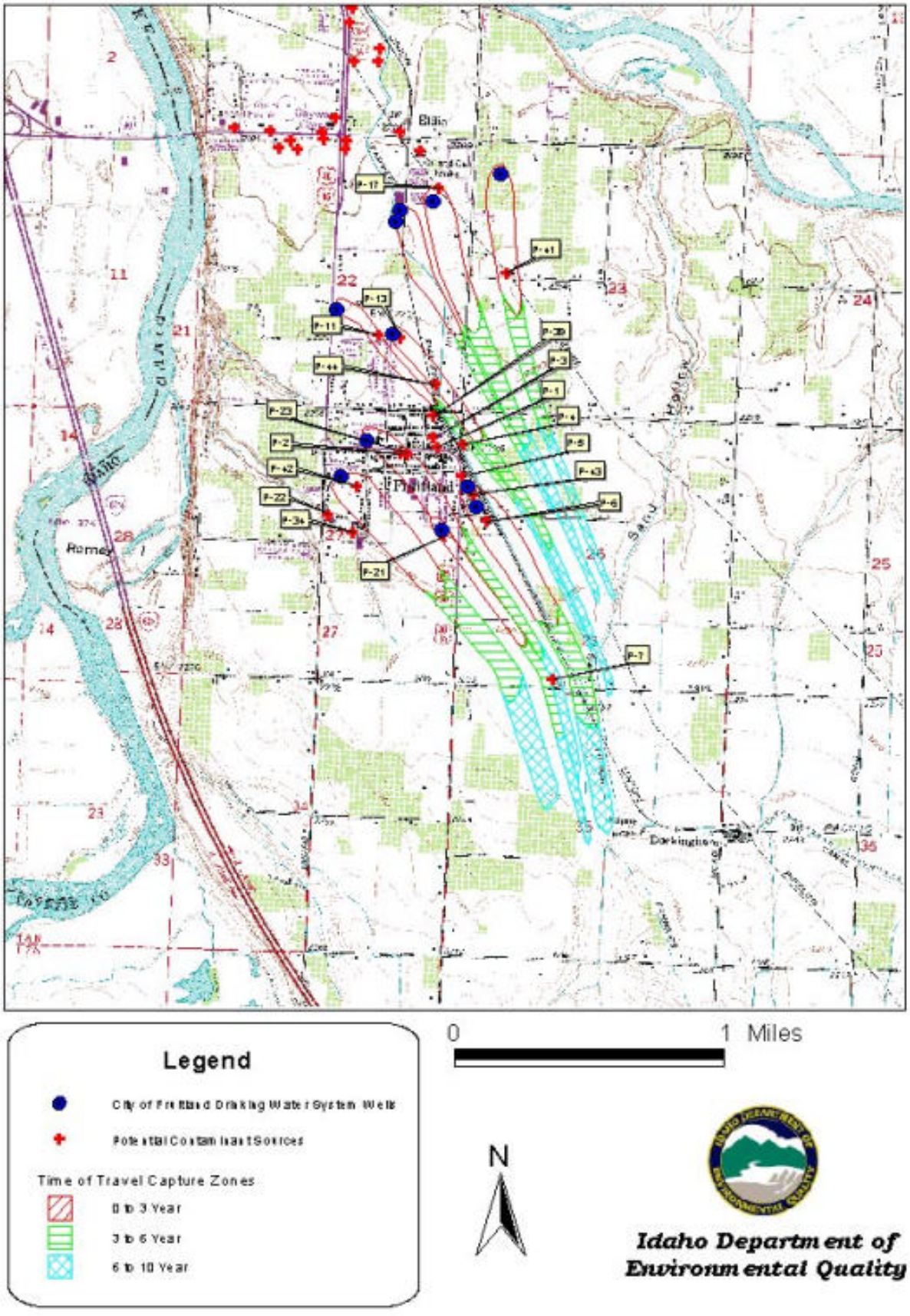


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Table 1. Fruitland Potential Contaminant Inventory

SITE #	Source Description	TOT Zone (years)	Source of Information	Potential Contaminants
P-1	UST	3-6	Database Search	VOC, SOC
P-2	Former Auto Sales	0-3	Database Search	VOC, SOC
P-3	Food Storage and Processing	3-6	Enhanced Inventory	IOC, Microbial
P-4	Food Processor	3-6	Database Search	IOC, VOC
P-5	AST	0-3	Database Search	VOC, SOC
P-6	Irrigation Supplies	0-3	Database Search	IOC
P-7	Light Food Processing	3-6	Database Search	IOC, Microbial
P-11	Light Food Processing	0-3	Database Search	IOC, Microbial
P-13	UST	0-3	Enhanced Inventory	VOC, SOC
P-17	Millwork	0-3	Database Search	VOC, SOC
P-22	Auto Service	0-3	Database Search	VOC, SOC
P-23	Old Gas Station	0-3	Enhanced Inventory	VOC, SOC
P-27	Small Feedlot	0-3	Enhanced Inventory	IOC, Microbial
P-34	Former Food Processor	0-3	Database Search	IOC
P-39	Warehouse	3-6	Enhanced Inventory	IOC, VOC
P-41	Pipeline	0-3	Enhanced Inventory	VOC, SOC
P-42	Building Contractor	0-3	Database Search	IOC, VOC
P-43	Road Maintenance	0-3	Database Search	VOC, SOC
P-44	Irrigation Canal	0-3	Enhanced Inventory	IOC, SOC, Microbial

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

Significant potential sources of contamination were ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristic, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

Hydrologic sensitivity was uniformly high for all wells (see Table 2). This reflects the shallow nature of the upper, unconfined groundwater system, the lack of significant clay layers retarding the vertical transport of contaminants, and the relative uniformity of hydrologic conditions and setting throughout the system.

Well Construction

The construction of the Fruitland public water system wells directly affects the ability of the wells to protect the aquifer from contaminants. The Fruitland drinking water system consists of eleven wells that extract ground

water for domestic and industrial uses. Water extraction from individual wells is monitored and managed from a central location. Well system construction scores were generally moderate, with a few wells scoring high sensitivity where well log or sanitary survey information was not available or was insufficient.

The wells in the Fruitland system range in total depth from 46 to 204 feet below ground surface with most being shallower than 70 feet (Table 2). Wells 1, 5 12, 14, 15, and 19 are completed in the shallow unconfined sand and gravel aquifer above a deeper blue clay layer. Wells 6, 9, 10, and 11 are typically completed with a gravel pack that crosses the deeper blue clay layer with multiple screened sections both above and below the blue clay. The screened section within the city wells range from 10 to 50 feet and averages 28 feet. The two wells which received a high susceptibility rating for construction (wells 1 and 12) had a lack of information about gravel packing and surface sealing, two important aspects of proper well construction.

Potential Contaminant Source and Land Use

Four wells rated in the high category for the inorganic chemical class, no wells were rated high for volatile organic chemicals, and one well were rated high for synthetic organic chemicals. Agricultural chemical sources and irrigated agricultural land use in the delineated source areas for most wells contributed the largest numbers of points to the contaminant inventory rating. Nitrogen isotope data (DEQ, in prep.) indicate that the source of high nitrate in the city wells and the shallow aquifer in general is primarily due to agricultural activities such as the use of commercial fertilizer on crops. Agricultural land is counted as a source of leachable contaminants. The points assigned to agricultural lands are based on the percentage of agricultural land. The following point distribution was used in the Fruitland susceptibility analysis:

Zone IB	25-50% agricultural land - 2 points (both irrigated and non-irrigated)
	>50% agricultural land - 4 points (both irrigated and non-irrigated)
Zone II	>25% agricultural land - 1 point (both irrigated and non-irrigated)
Zone III	> 50% agricultural land - 1 points (both irrigated and non-irrigated)

Table 2. Selected Construction Characteristics of Fruitland Wells.

Well #	Total Depth (ft.)	Screened Interval (ft. below ground surface)	Screen Below Blue Clay?	Gravel Pack Interval (ft.)
1	115	46-90	N	??
5	72	60-72	N	0-72
6	204	44-54, 58-68, 109-119, 179-189	Y	??
9	145	35-45, 70-90, 93-113	Y	20-145
10	175	30-40, 76-81	Y	28-175
11	95	30-50, 54-64, 65-75	Y	0-95
12	46	25-46	N	??
14	65	40-60	N	18-60
15	68	42-52	N	0-52
16	75	30-40	N	0-75
19	88		N	40-88

Detection of selected pesticides (atrazine and dacthal), used on local crops, further support the likelihood of impacts from agricultural activities. The deeper aquifer does not appear to have been impacted.

In terms of the total susceptibility score, it can be seen from Table 3 that seven of the eleven wells showed a high susceptibility for inorganic chemicals or synthetic organic chemicals, generally representing agricultural fertilizers and pesticides. Several wells (wells 6, 9, 14, 15 and 16) were automatically given a high susceptibility rating as a result of detection of inorganic contaminants (nitrate) above the drinking water standards or detection of synthetic organic chemical contaminants (atrazine).

Table 3. Summary of City of Fruitland Susceptibility Evaluation

Well	Susceptibility Scores									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	H	H	M	M	M	H	H	H	H	H
5	H	M	M	M	M	M	M	M	M	M
6	H	M	M	M	L	M	H*	M	M	M
9	H	M	M	M	L	M	H*	M	M	M
10	H	M	M	M	L	M	M	M	M	M
11	H	M	M	M	L	M	M	M	M	M
12	H	H	M	M	L	H	H	H	H	M
14	H	H	M	M	L	M	H*	M	M	M
15	H	H	M	H	L	M	M	M	H*	M
16	H	M	M	M	M	M	M	M	H*	H
19	H	L	M	M	L	M	M	M	M	M

H = High Susceptibility, M = Moderate Susceptibility, Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H* - Indicates source automatically scored as high susceptibility due to presence of either a VOC, SOC or an IOC above the Maximum Contaminant Level in the finished drinking water.

Susceptibility Summary

The Fruitland drinking water system is currently threatened by levels of nitrate contamination that approach or exceed the drinking water Maximum Contaminant Level for nitrate (10 mg/l) in several wells. The nitrate trend in most wells is increasing. Several wells have been shut down or blended with water from other wells. Arsenic concentrations in city wells currently meet drinking water standards, but arsenic may pose significant future problems if EPA reduces the standard to 0.005 mg/l as currently proposed.

Most wells in the Fruitland system take their water in whole or in large part from the shallow, unconfined alluvial aquifer, although several wells are completed in the deeper, semi-confined lacustrine aquifer. The shallow aquifer has been demonstrated to be a distinct water-bearing unit in terms of water quality, water yield, and the sources of recharge (DEQ, 2000.). The shallow aquifer contains much higher levels of nitrate,

lower levels of iron, and higher levels of arsenic than the deeper aquifer. Water yields from the shallow aquifer are significantly higher than from the deeper aquifer. Groundwater in the shallow aquifer is recharged primarily from surface water irrigation, direct precipitation, and canal leakage while the sources of recharge to the deeper aquifer are indeterminate but are very likely much older.

Nitrogen isotope data (DEQ, in prep.) indicate that the source of high nitrate in the city wells is primarily due to agricultural activities such as the use of commercial fertilizer on crops. Detection of selected pesticides (atrazine and dacthal), used on local crops further supports the likelihood of impacts from agricultural activities.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For Fruitland, source water protection activities should focus on implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the delineated source water areas. Most of the delineated areas are outside the direct jurisdiction of Fruitland. Partnerships with state and local agricultural agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of groundwater, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission and Payette Soil Conservation District, and the Natural Resources Conservation Service.

While the deeper aquifer possesses adequate quality, yield limitations, construction difficulties, and uncertainty as to the sustainability of production in the long-term (as a result of uncertainty as to sources of recharge) prevent the use of this water-bearing unit as a solution. An investigation of the feasibility of a shift to potential surface water sources to augment or replace the current groundwater system should be considered.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Boise Regional DEQ Office	(208) 373-0550
Boise State DEQ Office	(208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving few than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at (208) 743-6142 for assistance with source water (wellhead) protection strategies. Lance Holloway, Idaho Association of Soil Conservation Districts, at (208) 338-4321 has been contracted by IDEQ to work with the City of Fruitland in the development of its source water protection strategies.

References Cited

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Division of Environmental Quality, 1994. Ground Water and Soils Reconnaissance of the Lower Payette Area, Payette County, Idaho. Ground Water Quality Technical Report No. 5. Idaho Division of Environmental Quality. December 1994.

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Natural Resource Conservation Service, 1991. Idaho Snake-Payette Rivers Hydrologic Unit Plan of Work. March 1991.

United States Geological Survey, 1986. Quality of Ground Water in the Payette River Basin, Idaho. United States Geological Survey. Water Resources Investigation Report 86-4013.

University of Idaho. 1986. Ground Water Resources in a Portion of Payette County, Idaho. Idaho Water Resources Research Institute. University of Idaho. Moscow, Idaho. April 1986.

Attachment A

Fruitland Susceptibility Analysis Worksheet

The final scores for the Fruitland susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

> 13 High Susceptibility

Public Water System Name:	**Fruitland**	**Well #:**	**1**
Public Water System Number:	**3380005**		

1. System Construction		**Score**
Drill Date		
Driller Log Available	Yes	
Sanitary Survey (if yes, indicate date of last survey)	Yes	1985
Well meets IDWR construction standards	No	1
Wellhead and surface seal maintained	No	1
Casing and annular seal extend to low permeability unit	No	2
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**6**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
ZONE 1A					
Land Use Zone 1A	Irrigated Cropland	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	No				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		2	2	2	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		4	2	4	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	>50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		***12***	***10***	***12***	***4***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**21**	**15**	**19**	**6**
4. Final Susceptibility Source Score		**15**	**14**	**15**	**13**

Public Water System Name:	**Fruitland**	**Well #:**	**5**
Public Water System Number:	**3380005**		

1. System Construction		**Score**
Drill Date	10/08/1968	
Driller Log Available	Yes	
Sanitary Survey (if yes, indicate date of last survey)	Yes	1985
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	Yes	0
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**2**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
ZONE 1A					
Land Use Zone 1A	Irrigated Cropland	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	No				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		0	4	4	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		2	4	4	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	25-50% irrigated ag	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		***6***	***12***	***12***	***2***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**15**	**17**	**19**	**4**
4. Final Susceptibility Source Score		**10**	**11**	**10**	**9**

Public Water System Name: Fruitland **Well #:** 6

Public Water System Number: 3380005

1. System Construction		Score
Drill Date		04/04/1973
Driller Log Available	Yes	
Sanitary Survey (if yes, indicate date of last survey)	No	
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	No	1
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**3**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
ZONE 1A					
Land Use Zone 1A	Irrigated Cropland	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	Yes (IOC)				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		2	2	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		3	2	2	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	25 - 50% irrigated ag	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		***9***	***8***	***6***	***2***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		0	0	0	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***2***	***2***	***2***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**17**	**13**	**12**	**4**
4. Final Susceptibility Source Score		**11**	**11**	**10**	**10**

Public Water System Name:	**Fruitland**	**Well #:**	**9 & 10**
Public Water System Number:	**3380005**		

1. System Construction		**Score**
Drill Date		
Driller Log Available	Yes	06/12/1978
Sanitary Survey (if yes, indicate date of last survey)	Yes	1997
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	Yes	0
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**2**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
ZONE 1A					
Land Use Zone 1A	Irrigated Cropland	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	Yes (IOC)				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		4	0	4	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	>50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		***10***	***6***	***10***	***4***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)	No	0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)	Yes	1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**19**	**11**	**17**	**6**
4. Final Susceptibility Source Score		**11**	**9**	**10**	**9**

Public Water System Name: **Fruitland** **Well #:** **11**

Public Water System Number: **3380005**

1. System Construction		**Score**
Drill Date		
Driller Log Available	Yes	05/03/1976
Sanitary Survey (if yes, indicate date of last survey)	Yes	1995
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	Yes	0
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**2**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
ZONE 1A					
Land Use Zone 1A	Irrigated Cropland	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	No				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		0	2	2	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		4	1	4	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	>50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		***10***	***9***	***12***	***4***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)	No	0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)	Yes	1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**19**	**14**	**19**	**6**
4. Final Susceptibility Source Score		**11**	**11**	**10**	**9**

Public Water System Name:	**Fruitland**	**Well #:**	**12**
Public Water System Number:	**3380005**		

1. System Construction		**Score**
Drill Date		
Driller Log Available	No	
Sanitary Survey (if yes, indicate date of last survey)	Yes	?
Well meets IDWR construction standards	No	1
Wellhead and surface seal maintained	Yes	0
Casing and annular seal extend to low permeability unit	No	2
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**5**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
ZONE 1A					
Land Use Zone 1A	Irrigated Cropland	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	No				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		2	2	2	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		4	1	4	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	>50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		***12***	***9***	***12***	***4***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)	No	0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)	Yes	1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**21**	**14**	**19**	**6**
4. Final Susceptibility Source Score		**14**	**13**	**14**	**12**

Public Water System Name: **Fruitland** **Well #:** **14**

Public Water System Number: **3380005**

1. System Construction		**Score**
Drill Date	03/12/1984	
Driller Log Available	Yes	
Sanitary Survey (if yes, indicate date of last survey)	Yes	1985
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	Yes	0
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**2**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
ZONE 1A					
Land Use Zone 1A	Irrigated Ag	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	Yes (IOC)				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		2	0	0	2
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		4	0	4	0
Zone 1B contains or intercepts a Group 1 Area	Yes	2	2	2	0
Land Use Zone 1B	>50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		***12***	***6***	***10***	***6***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**21**	**11**	**17**	**8**
4. Final Susceptibility Source Score		**11**	**9**	**10**	**10**

Public Water System Name:	**Fruitland**	**Well #:**	**15**
Public Water System Number:	**3380005**		

1. System Construction		**Score**
Drill Date	10/03/1986	
Driller Log Available	Yes	
Sanitary Survey (if yes, indicate date of last survey)	Yes	1998
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	Yes	0
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**2**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
ZONE 1A					
Land Use Zone 1A	Irrigated Agricultural Land	2	2	2	2
Farm chemical use high	Yes	2	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	Yes (SOC)				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***4***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		2	2	4	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		4	1	4	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	>50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		***12***	***9***	***14***	***4***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**21**	**14**	**21**	**6**
4. Final Susceptibility Source Score		**11**	**10**	**11**	**9**

Public Water System Name: Fruitland **Well #:** 16

Public Water System Number: 3380005

1. System Construction		Score
Drill Date		
Driller Log Available	No	
Sanitary Survey (if yes, indicate date of last survey)	No	
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	No	1
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**3**

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
ZONE 1A					
Land Use Zone 1A	Urban Commercial	2	2	2	2
Farm chemical use high	Yes	0	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	Yes (IOC)				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***2***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		2	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		2	0	2	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	25-50% Agricultural Lands	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		***8***	***4***	***6***	***2***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)		1	1	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	1	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***4***	***4***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***2***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**16**	**11**	**13**	**4**
4. Final Susceptibility Source Score		**11**	**11**	**11**	**11**

Public Water System Name:	**Fruitland**	**Well #:**	**19**
Public Water System Number:	**3380005**		

1. System Construction		**Score**
Drill Date	12/02/1998	
Driller Log Available	Yes	
Sanitary Survey (if yes, indicate date of last survey)	Yes	1999
Well meets IDWR construction standards	Yes	0
Wellhead and surface seal maintained	Yes	0
Casing and annular seal extend to low permeability unit	Yes	0
Highest production 100' below static water level	No	1
Well located in 100 year flood plain	No	1
Total System Construction Score		**2**
2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	No	2
Vadose zone composed of gravel, fractured rock or unknown	No	0
Depth to first water >300'	No	1
Aquitard present with >50' cumulative thickness	No	2
Total Hydrologic Sensitivity Score		**5**

3. Potential Contaminant Source / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
ZONE 1A					
Land Use Zone 1A	Urban Commercial	2	2	2	2
Farm chemical use high	Yes	0	0	0	0
IOC, VOC, SOC, or Microbial sources in Zone 1A	No				
Total Potential Contaminant Source / Land Use Score - Zone 1A		***2***	***2***	***2***	***2***
ZONE 1B					
Contaminant Sources Present (Score = # Sources x 2)		0	4	4	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		0	2	2	0
Zone 1B contains or intercepts a Group 1 Area		2	2	2	0
Land Use Zone 1B	<25% Agricultural Lands	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		***2***	***8***	***8***	***0***
ZONE II					
Contaminant Sources Present (Score = # Sources x 1)	No	0	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)	No	1	0	1	0
Land Use Zone II	>50% Irrigated Agricultural Land	2	2	2	0
Total Potential Contaminant Source / Land Use Score - Zone II		***3***	***2***	***3***	***0***
Zone III					
Contaminant Source Present (Score = # of Sources x 1)		1	0	0	0
Sources of Class II or III leachable contaminants or Microbials (Score = # of Sources x 1)		1	0	1	0
Is there irrigated agricultural lands that occupy >50% of Zone III	Yes	1	1	1	0
Total Potential Contaminant Source / Land Use Score - Zone III		***3***	***1***	***2***	***0***
Cumulative Potential Contaminant Source / Land Use Score		**10**	**13**	**15**	**2**
4. Final Susceptibility Source Score		**9**	**10**	**10**	**8**